

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
6 October 2005 (06.10.2005)

PCT

(10) International Publication Number  
WO 2005/093489 A3

(51) International Patent Classification<sup>7</sup>: G02B 26/02, (74) Agents: UITTENBOGAARD, Frank et al.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(21) International Application Number: PCT/IB2005/050890

(22) International Filing Date: 14 March 2005 (14.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 04101205.5 24 March 2004 (24.03.2004) EP

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

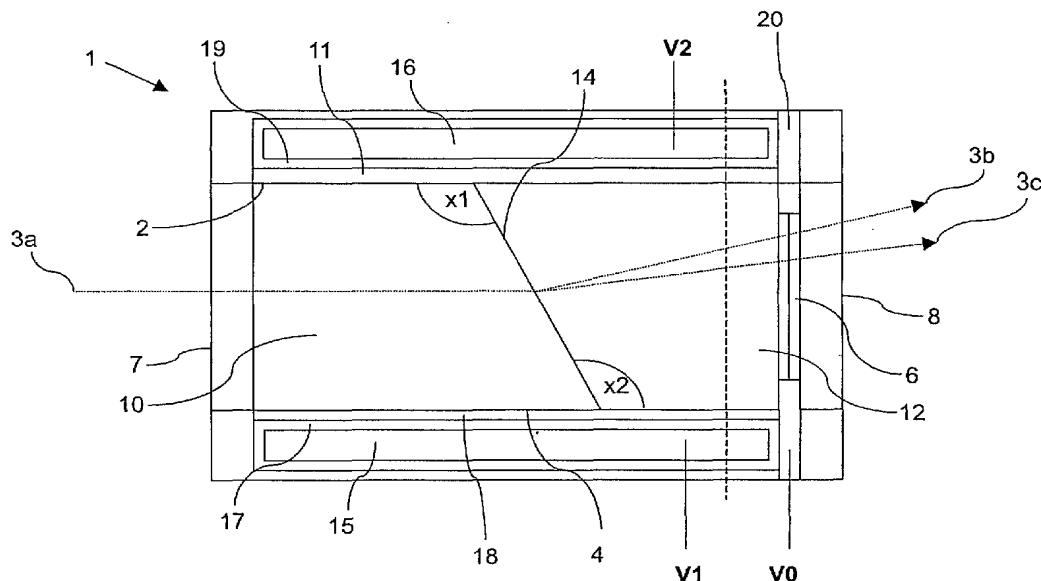
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE,

[Continued on next page]

(54) Title: BIREFRINGENT OPTICAL SYSTEM



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(57) **Abstract:** The invention relates to an optical system comprising a fluid chamber I and a birefringent part. The fluid chamber comprises first and second fluids 10, 12 having different indices of refraction, the interface between the fluids forming a meniscus 14. The birefringent part is capable of varying characteristics of a first radiation beam 3b and a second radiation beam 3c, the first and second radiation beams having different polarisations. Variation in the configuration of the meniscus causes variation in the characteristics of the first radiation beam and the second radiation beam. Variation in the configuration of the meniscus may be controlled by electrowetting.



AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

**Published:**

— with international search report

**(88) Date of publication of the international search report:**  
23 February 2006

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

Intern	al Application No
PC171B2005/050890	

A. CLASSIFICATION OF SUBJECT MATTER	IPC 7 G02B26/02 G02B3/14 G02B27/28 G02B5/30
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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	<p>WO 2004/027490 A (KONINKLIJKE PHILIPS ELECTRONICS N.V; HENDRIKS, BERNARDUS, H., W; KUIPE) 1 April 2004 (2004-04-01)</p> <p>abstract</p> <p>page 6, line 28 - page 7, line 5</p> <p>page 7, line 33 - page 8, line 4</p> <p>page 27, line 1 - line 13</p> <p>figures 1-4</p> <p>-----</p>	1,3-6,10
Y	<p>DE 199 59 203 A1 (CARL ZEISS JENA GMBH)</p> <p>13 June 2001 (2001-06-13)</p> <p>abstract</p>	1,2,5,6
A	<p>column 2, line 23 - line 39</p> <p>column 3, line 8 - line 27</p> <p>figure 1</p> <p>-----</p> <p>-/-</p>	3,4,10, 11

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

24 June 2005

Date of mailing of the international search report

26.09.2005

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

Inter	Application No
PCT/IB2005/050890	

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 03/071335 A (KONINKLIJKE PHILIPS ELECTRONICS N.V.; FEENSTRA, BOKKE, J; VAN DE WALLE,) 28 August 2003 (2003-08-28) abstract	1,2,5,6
A	page 3, line 14 - page 4, line 7 figures 1a,1b ----- US 5 091 801 A (EBSTEIN ET AL) 25 February 1992 (1992-02-25) abstract column 2, line 60 - column 4, line 68 figure 3 -----	3,4,10, 11
A		1-6,10, 11

## INTERNATIONAL SEARCH REPORT

tional application No.  
PCT/IB2005/050890

### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6, 10 (dependent on 3-6), 11 (dependent on 3-6)

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 10 (dependent on 3-6), 11 (dependent on 3-6)

An optical system comprising a fluid chamber, the fluid chamber comprising two fluids with different indices of refraction and an interface between the fluids forming a meniscus which is variable in order to change characteristics of light beams passing therethrough, wherein one of the fluids is birefringent.

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2. claims: 7-9, 10 (dependent on 7-9), 11 (dependent on 7-9)

An optical system comprising a fluid chamber, the fluid chamber comprising two fluids with different indices of refraction and an interface between the fluids forming a meniscus which is variable in order to change characteristics of light beams passing therethrough, wherein the optical system further comprises a solid birefringent part.

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3. claims: 10 (dependent on 1-2)

An optical scanning device comprising a birefringent part and a fluid chamber, the fluid chamber comprising two fluids with different indices of refraction and an interface between the fluids forming a meniscus which is variable in order to change characteristics of light beams passing therethrough, wherein the meniscus is configurable to correct for a varying information layer distance.

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4. claims: 11 (dependent on 1-2)

An optical microscopy device comprising a birefringent part and a fluid chamber, the fluid chamber comprising two fluids with different indices of refraction and an interface between the fluids forming a meniscus which is variable in order to change characteristics of light beams passing therethrough, wherein the contrast of the output image may be varied by varying the meniscus shape.

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**INTERNATIONAL SEARCH REPORT**

nation on patent family members

Inte-- al Application No  
PCT, IB2005/050890

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 2004027490	A 01-04-2004	AU 2003263436	A1	08-04-2004
DE 19959203	A1 13-06-2001	NONE		
WO 03071335	A 28-08-2003	AU 2003201752	A1	09-09-2003
		JP 2005517991	T	16-06-2005
US 5091801	A 25-02-1992	NONE		